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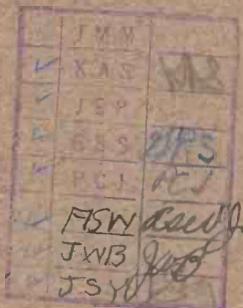
UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

RS
Mt Pine
(Impnira, Stand Improvement)
Stanislaus

Berkeley, California
December 15, 1933

REPORT ON RELEASE CUTTING IN ADVANCE
REPRODUCTION, MINERS DITCH SALE

Stanislaus National Forest



W. H. Gibbs
California Forest Experiment Station

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Purpose

To release sugar pine, ponderosa pine and incense cedar seedlings and saplings from competition with each other or white fir and to stimulate the growth of dominants of all species by thinning.

Location and Time of Operation

The project was started October 16, 1933, on the old Miners Ditch Sale area, Stanislaus National Forest. The work commenced at a point where the old railroad grade, now used as a truck trail, crosses the south fork of Bumblebee Creek and progressed southerly to the south boundary of Section 8. The lower road served as a west boundary and on the east the boundary was fixed by the old railroad grade in Section 9 and the sale boundary in Section 8. Work stopped November 27, 1933, due to snow. A small area within the boundaries was left unfinished.

Description of Area and Stand

The area is situated in the Bumblebee drainage. The altitude ranges from 5000 to 8000 feet. The general slope is northwest to Cow Creek, a branch of the Middle Fork of the Stanislaus River. It is broken up by the sub-drainage into northerly, easterly and westerly exposures. The slopes are moderate to steep. The site is mostly Class I and Class II. The original stand was probably 50-60 M.B.M. per acre and the residual stand is about 10-12 M.B.M. per acre. The forest types are sugar pine-fir, sugar pine-ponderosa pine and some pure ponderosa pine.

The advance growth is irregularly distributed in groups. From 10 to 15 per cent is pine and the remainder white fir and incense cedar. It was established prior to logging and is now about thirty years old and from 2 to 20 feet high. Some reproduction has come in since logging, mostly on abandoned railroad grades and cuts.

History of Stand

The area was logged during the period 1920-1925. The residual stand of large trees is irregularly distributed. Release of advance growth is better in the larger openings. Under groups of large trees the reproduction is growing slowly. Brush has come in on the upper and drier slopes. A few oaks and snags are left on the area.

The logging operation destroyed some of the advance growth and reduced the size of the groups. The slash on the area was lopped and scattered at the time of logging. The area has been intensively protected and no fires have occurred.

Previous Work

Under the ZCA program it was decided to release sugar pine seedlings from the competition of white fir and incense cedar. During August and September a crew of CCC boys under the supervision of cultural foreman Deane Storall covered 813 acres of the area. They released 6697 sugar pine seedlings, and cut 44,100 trees. They released 31 sugar pines to the acre and cut 207 trees to the acre.

Crew Organization and Operation

Three 4-man crews were used on the project. Each crew was supervised by a crew boss, who also acted as recorder. The men were strung out to cover a strip approximately a chain wide. The strips were run from one natural boundary to another, sometimes across the contours and sometimes parallel with them.

Each man was trained to select trees to be released, subject to approval by the crew boss. No pines could be cut without first consulting the crew boss. The crew boss was instructed to keep each man in sight at all times to circulate freely from man to man and check on work. On all doubtful cases he was instructed to leave the tree uncut subject to approval by the camp superintendent.

Each man was supplied with a double-bit axe, weighing $3\frac{1}{2}$ pounds. The men selected were all experienced woodsmen and preferred an axe of this type.

Records

A record was kept of trees released and trees cut by species. The coverage was taken from the map as blocks were completed.

General Treatment

A group was worked from the inside in order not to reduce the crown space on the perimeter. Trees were selected for release in the following order: sugar pine, ponderosa pine, and incense cedar. In choosing between trees of the same species the better tree was selected. Vigorous dominant trees or less valuable species were given preference over poor quality trees or the more valuable species. The spacing was approximately 6 feet, but varied from 4 to 10 feet dependent on the size of the tree. No set rules could be rigidly applied. Each case was considered by itself, bearing in mind the

preference by species, the vigor of the individual trees, the size of the trees and shape and size of the group. The idea was to improve the stand without loss of ground control or sacrifice of the more valuable species.

Special Treatment

Some of the sugar pine seedlings were weak and spindling. It was feared that too sudden release would result in loss from excessive transpiration, wind action and snow break. In such cases the competitive trees were girdled. It is believed that this method will give the maximum protection. The release will be less sudden and just as effective.

Small oaks in competition with pines and cedars were removed. There are a number of larger oaks scattered over the area, which should be removed. These could be removed by the special felling crews, which will also remove snags and diseased trees on the area.

In brush areas the advance growth was very light and very little thinning was done. In some cases brush was trimmed to free the tops of seedlings.

Slash Disposal

Trees up to 6 feet were cut and thrown in log trails or scattered in openings. Larger trees were lopped, and the slash scattered. Close to camp the slash was piled and burned. Along roads and trails it would be a good plan to pile and burn the slash next spring.

Test of Other Tools

Double-bit axes of the swamping pattern weight $3\frac{1}{2}$ lbs were used by the crew. Such axes, in the hands of experienced men, seemed to be the best tools. There was always an extra blade if by chance a man cut into the ground and dulled his axe. It was easier to sharpen a double-bit axe in the field. With less experienced men a pole axe, weighing about 3 lbs., should be the choice.

Bolos and boy's axes were tried out but were too light for use on the larger trees.

A power saw which would cut trees up to six inches was tried out. Three men were necessary to operate it. It cut trees quickly but was hard to handle on rough ground and not practicable for the work.

Results

The operation covered 560 acres and released 97,775 trees. Twenty per cent of these were sugar pine, eleven per cent ponderosa pine, forty per cent incense cedar and twenty-nine per cent white fir. Trees cut came to 132,178 of which about one per cent was sugar pine, two per cent

were ponderosa pine, forty-three per cent cedar and fifty-four per cent white fir. Previous work by Stowell released 6697 sugar pine and cut 44,100. This brings the total number of trees released to 84,452 and total number cut to 176,278. This raises the proportion of sugar pine released to 26 per cent of the total number of trees released.

On an acre basis, 39 sugar pines, 18 ponderosa pines, 55 incense cedars and 40 firs, a total of 149 trees, were released. Three sugar pines, 5 ponderosa pines, 100 cedars and 126 firs, a total of 234 trees to the acre, were cut. In addition, Stowell's crew cut 81 trees per acre which brings the total average number of trees cut per acre to 315.

On a man hour basis, 38 trees were released and 55 trees cut. The number of man hours worked was 2372. The CCC men worked 286 man hours. They released 8 trees per man hour and cut 52 trees per man hour.

The area treated daily averaged 1.9 acre per man. The CCC crew averaged 1.3 acres per man day. Results are shown in Table 1.

Costs

The costs are based on the MIRA work. They are shown in Table 2. Costs have been segregated to show cost of thinning labor, miscellaneous labor, thinning supervision, and recording, miscellaneous supervision, general supervision and cook house costs.

They are also shown as unit costs per man hour and per acre. Because of the small size of crew, supervision and cook house costs are much higher than can be expected in a full-sized camp. Costs totaled \$0.92 per man hour and \$4.37 per acre. A tentative camp set-up for a 48 man camp was made and comparative costs figured on the basis of the present wage scale and food prices. Such a set-up brings the cost to \$0.65 per man hour or \$3.15 per acre and is suggested as a basis for future work.

Table No. 1

Species	Trees Released						Trees Cut						
	S.P.	P.P.	I.C.	W.F.	Total	hour	S.P.	P.P.	I.C.	W.F.	Mixed	Total	hour
Number (CCC)	6097				6097	8					44100	44100	52
Nira	15477	8492	31072	22804	77775	32	1572	3173	56165	70968		153178	25
Total	23174	8492	31072	22804	36452		1572	3173	56165	70968	44100	176278	
Per cent	26.0	10.0	37.0	27.0	100.0		1.4	2.4	42.6	53.6		100.0	
Trees per acre	59	15	53	40	149		3	5	100	126	81	315	

Tentative Camp Set-Up
For Thinning Crew

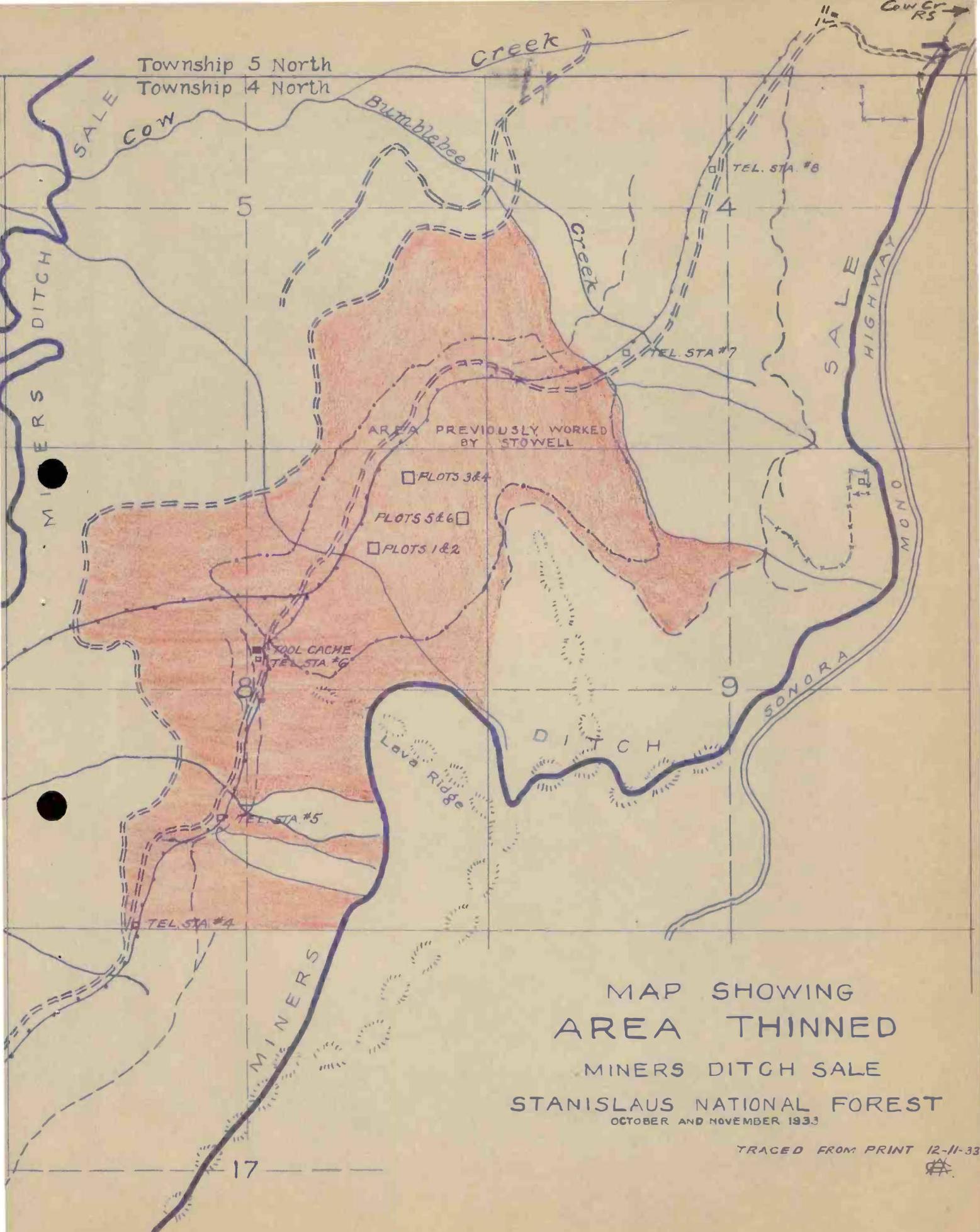
36 choppers at	\$3.60	\$129.60
6 field foremen		
at	4.70	28.20
1 cook at	8.80	8.80
2 flunkies at	3.60	7.20
1 bull cook at	3.60	3.60
1 truck driver at	4.40	4.40
1 camp supt. at	7.22	7.22
<u>45</u>		<u>\$159.02</u>

<u>Cost per hour</u>		<u>Cost per acre</u>	
Basis	388 man hours	Basis	60 acres
Thinning	\$.450		\$.160
Field supervision	.097		.470
General supervision	.085		.130
Cook house	.053		.286
Miscellaneous labor and supervision	<u>.030</u>		<u>.133</u>
Total cost P.M.H.	<u>\$.655</u>	Total cost per acre	<u>\$.149</u>

Table No. 2

Costs

Segregation	Actual cost 12-man crew plus overhead				Estimated cost 36-man crew plus overhead	
	Cost of operation	Cost per man hr.	Cost per acre	Per man hour	Per acre	
Thinning labor	\$ 1067.40	.450	\$ 2.160	.450		\$ 2.160
Miscellaneous labor	54.35	.023	.099	.023		.099
Thinning supervision	443.56	.144	.704	.144		.470
Miscellaneous supervision	66.44	.023	.116	.023		.063
General supervision	522.50	.135	.576	.135		.180
Cook house loss	540.28	.144	.607	.144		.266
Totals	\$ 2294.51	.983	4.575	.666		3.149





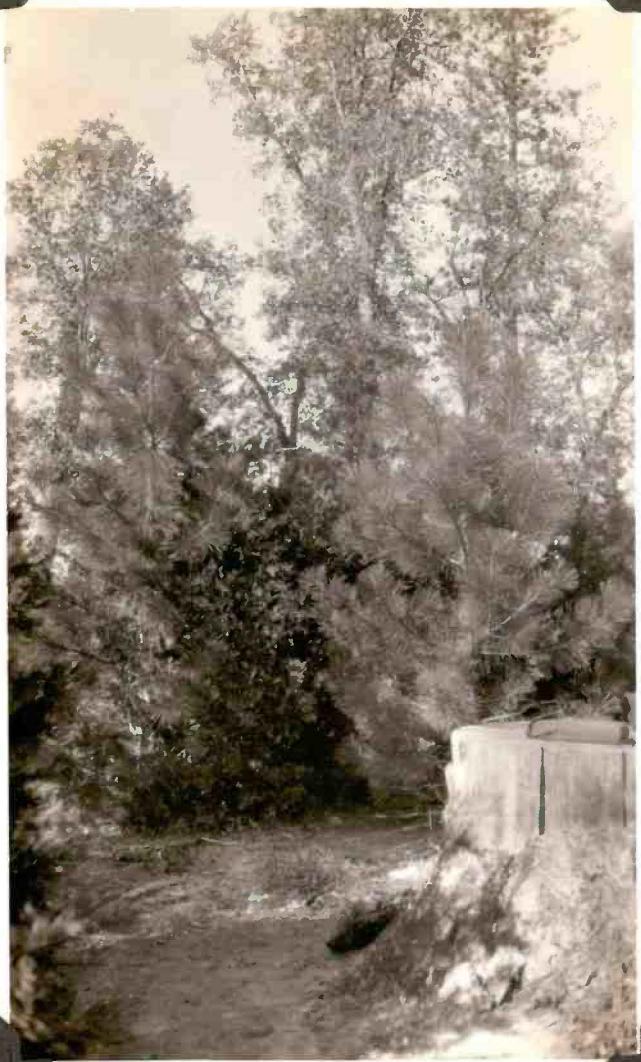
No. 3-2

Small group in sugar pine fir type, sapling stage, marked for cleaning. Trees to be left are marked with white tags.



No. 3-2

Repeats No. 3-2 after cleaning.



No. 1-5

Group in ponderosa pine type, sapling stage, before cleaning.



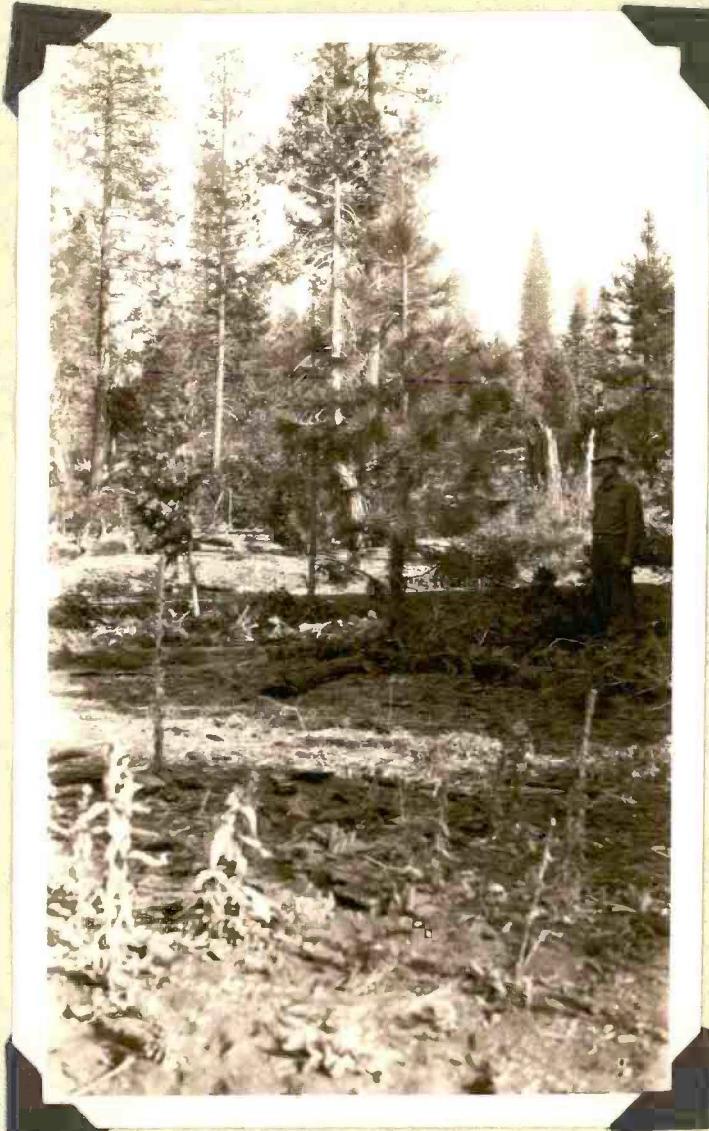
No. 1-6

Repeats No. 1-5 after cleaning. Released 3 ponderosa pines and 3 incense cedars. Cut 15 incense cedars, 1 white fir and 1 ponderosa pine. Spacing approximately 8 feet.



No. 2-1

Small group on ponderosa pine type
sapling stage before cleaning.



No. 2-2

Repeats No. 2-1 after cleaning. Released
2 ponderosa pines and 2 incense cedars. Cut
13 incense cedars and 2 ponderosa pines.